

Mr. Griffiths. The readings employed in constructing the curve have not been corrected for instrumental error, which, according to comparisons made at the end of the voyage, is -0.15 inch.

The *Empress of Asia* was also heavily involved in the storm and recorded the lowest barometer in the group of four vessels named, 27.39 inches, corrected. This vessel, under command of Capt. L. D. Douglas, R. N. R., Observer J. F. Patrick, was bound from Vancouver to Yokohama. Her storm log is given herewith, as well as a reproduction of the barograph trace obtained, figure 2.

October 20. Noon position, latitude $49^{\circ} 51' N.$, longitude $174^{\circ} 09' E.$, barometer 29.81 inches, wind S., force 5, backing to ESE. at 1 p. m. and increasing in force. 4 p. m., barometer 29.29, temperature 48° , wind force 7, raining. 8 p. m., latitude $49^{\circ} 05' N.$, longitude $170^{\circ} 34' E.$, barometer 28.78, wind increasing to strong ESE, gale with high seas and continuous rain. 10 p. m., wind force 10, barometer 28.13, falling rapidly. Midnight, wind decreasing and backing to NE., barometer 27.53, temperature 50° .

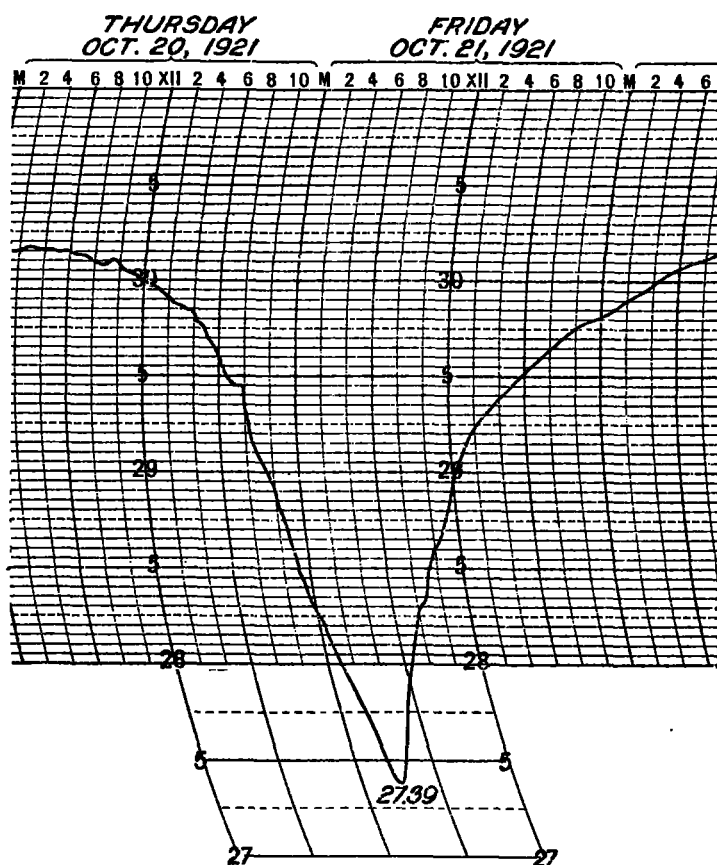


FIG. 2.—Barograph trace, October 20-21, 1921, British S. S. *Empress of Asia*.

October 21. 1 a. m., latitude $48^{\circ} 33' N.$, longitude $168^{\circ} 03' E.$, light variable winds with high SE. swell, barometer 27.48 (correction -0.09 inch). 1:15 a. m., wind changed to NW., force 6, with high, confused sea. 2 a. m., barometer 27.50. 3 a. m., barometer 27.66, wind increasing to force 10, mountainous seas. Reduced speed, wind and sea brought 3 points on starboard bow. 4 a. m., latitude $48^{\circ} 14' N.$, longitude $166^{\circ} 33' E.$, wind increasing to hurricane force with very high, confused sea, barometer 27.91. 5 to 7 a. m., terrific squalls and high drift, being unable to see more than a ship's length, seas phenomenal. 8 a. m., latitude $48^{\circ} 12' N.$, longitude $165^{\circ} 52' E.$, barometer 28.60, patches of blue sky appearing. 8 to 11 a. m., wind continuing to force 12 with heavy hail squalls. Noon, latitude $48^{\circ} 08' N.$, longitude $165^{\circ} 15' E.$, weather moderating slightly to force 7 at midnight. Position at midnight, latitude $46^{\circ} 58' N.$, longitude $162^{\circ} 01' E.$

This storm possessed at a high latitude the pressure characteristics of a tropical cyclone, in this respect resembling the West Indian hurricane of September 7-18, 1921, in the North Atlantic Ocean. It continued

its northeasterly movement to Bering Sea where, on the evening of the 21st, a barometer reading of 28.66 inches was recorded at St. Pauls, Pribilof Islands. On the following day it was central over the Alaskan Peninsula, very much diminished in energy.

Aside from the four storms mentioned no other disturbance of a general character prevailed during the month, so far as known. One of moderate extent and intensity, however, developed on the 9th off the southwest Mexican coast. It was experienced by the British S. S. *Mongolian Prince*, Capt. J. Halloway, Observer J. McLoughlin, Vancouver for Panama. The storm log of this vessel is as follows:

Gale began on the 9th, wind ESE.; heavy southerly swell; lowest barometer, 29.68 inches, occurred at 4 a. m., same date, in latitude $17^{\circ} 15' N.$, longitude $101^{\circ} 51' W.$; gale ended on 10th; highest force of wind, 7, SE.; shifts ESE.-SE.

Pressure conditions at the island stations of Dutch Harbor, Honolulu, and Midway Island were not marked by any unusual fluctuations. For the month as a whole pressure was below normal by small amounts at all three stations.

NO TYPHOON IN THE PHILIPPINES DURING OCTOBER, 1921. ONLY THREE IN THE PACIFIC.

By JOSÉ CORONAS, S. J., Chief Meteorological Division.

[Weather Bureau, Manila, P. I., Nov. 4, 1921.]

There was not a single typhoon traversing the Philippines during last October; and even of the three typhoons that have been observed in the Pacific only one approached sufficiently near to influence slightly our weather in the archipelago. Hence the lack of rain reported generally from our stations, especially from those of the western and northern part of Luzon as can be seen in the following table:

Rainfall data for October, 1921.

Station.	Total.	Departure from normal.
	mm.	mm.
Surigao.....	231.3	- 16.4
Cebu.....	146.3	- 60.2
Hollo.....	146.4	-114.0
Legaspi.....	258.7	- 68.8
Batangas.....	110.3	- 37.6
Manila.....	37.4	-151.0
San Isidro.....	122.7	- 36.4
Iba.....	104.9	- 68.6
Ipagupan.....	97.0	- 99.8
Baguio.....	115.6	-271.5
San Fernando, La Union.....	2.0	-142.8
Vigan.....	2.5	-182.6
Tuguegarao.....	24.6	-227.5
Laong.....	4.6	-215.9
Aparri.....	190.8	-107.1

The first Pacific typhoon was formed on 27th to 28th of September near longitude $130^{\circ} E.$ and latitude $10^{\circ} N.$; it moved practically to the north until the 30th when it recurved northeastward, probably filling up on the 2d or 3d of October near longitude $135^{\circ} E.$ and latitude $20^{\circ} N.$

The second typhoon formed on October 1 to 2 over the western Carolines in about longitude $145^{\circ} E.$ and latitude $8^{\circ} N.$ It moved northwestward, passing about halfway between Guam and Yap on the 3d. On the 6th the typhoon began to recurve northeastward near longitude $135^{\circ} E.$ and latitude $20^{\circ} N.$ The weather maps of Tokyo show this typhoon moving north-northeast near the eastern coast of Japan on the 10th and 11th.

The S. S. *Creole State* was under the influence of this typhoon between the Ladrone Islands and Luzon on October 4 to 8.

The third typhoon appeared northeast of Guam on the 13th near longitude 150° E. and latitude 17° N. It moved probably west by north first, then west-northwest and recurved gradually to north and northeast to the south of the Bonins. The center was situated at noon of the 18th southeast of the Bonins in about longitude 145° or 146° E. and latitude 24° or 25° N., moving apparently east-northeast. The S. S. *Empress of Asia*

was in the center of a big cyclone on October 21 in about longitude 168° 3' E. and latitude 48° 33' N.¹ It is not probable, however, that the disturbance met by this steamer was the typhoon just mentioned, but rather a continental depression which coming apparently from Manchuria traversed northern Japan on 18th to 19th and developed probably in a big cyclone in the Pacific east of northern Japan.

¹ See report on p. 531.

NOTES ON WEATHER IN OTHER PARTS OF THE WORLD.

Alaska.—Dawson, October 23: Navigation on the Yukon River is closed for the winter * * *.—*Washington Evening Star*, Oct. 24, 1921.

British Isles.—The rainfall of the month was below the average generally in the southeastern half of the British Isles, the areas with more than the average lying mainly in the northwest of Ireland and west of Scotland. * * *

In London (Camden Square) the mean temperature was 56.2° F. or 6° F. above the average, and the highest for October in 64 years' record * * *.¹

Belgium.—In Belgium the drought again became serious, and it was necessary to close factories and limit the consumption of water for domestic purposes.¹

Switzerland.—Berne, October 21: There has been no rain worth mentioning throughout Switzerland since August, and the drought which began a year ago still continues. * * * Forest fires are again reported, something unprecedented at this season. * * * The Rhine has not been so low for a century, and navigation

for boats with deep draft is impossible.—*New York Times*, Oct. 22, 1921.

India.—The month opened with a vigorous monsoon in the peninsula and rainfall above normal in most places. Early harvest had begun, and the condition of the crops was good generally, except in Baluchistan, where the prospects were very poor.¹

Japan.—Tokyo, October 10: Rain has fallen in Japan for 40 days, something never known before.—*Brooklyn Eagle*, Oct. 10, 1921.

Argentina.—On the night of October 3-4 the Argentine was visited by the worst storm experienced in many years. A deep depression, moving eastward, and centered over Entre Rios at 8 h. on the 4th, brought heavy rains over a great part of the country, which caused the rivers to rise alarmingly. * * * By the morning of the 4th a large part of Buenos Aires was flooded * * *.¹

Australia.—In eastern Australia satisfactory rains have fallen and crop and pasture prospects are good.¹

¹ *Meteorological Magazine*, November, 1921, p. 306.

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DETAILS OF THE WEATHER IN THE UNITED STATES.

GENERAL CONDITIONS.

One of the outstanding features of the weather of the month was the continued high temperature in practically all parts of the country and deficient precipitation except in Florida and the Lake region. The monthly mean pressure was below normal east of the Rocky Mountains as in the preceding month, and the number of cyclones and anticyclones was greater than the average for October.

The daily weather chart of the 25th shows the presence of three very deep depressions of the barometer, the first a tropical cyclone passing from west to east over the Florida Peninsula with central pressure (as afterwards developed) below 29 inches; the second over western Kansas, lowest pressure 29.26 inches and the third over southeastern Alaska, lowest pressure 29.02 inches. Such extreme variations in pressure are unusual in October.

CYCLONES AND ANTICYCLONES.

By W. P. DAY, Observer.

Alberta lows were again in excess. The centers of several disturbances of North Pacific origin passed inland between Sitka, Alaska, and Vancouver Island, British Columbia, causing southerly gales on the Washington and Oregon coasts; however, on the weather

chart as published these centers made their first appearance over Alberta, Canada, and are so classified.

Five HIGHS moved in from the Pacific Ocean, and important high pressure areas began to drop down from the Canadian interior, the number over eastern Canada being excessive.

The feature of the month was the great hurricane over the eastern Gulf (No. X on Chart III). A more complete path of this storm is shown elsewhere in this issue.

Tables showing the number of HIGHS and LOWS by type follow:

LOWS.	Al- berta.	North Pa- cific.	South Pa- cific.	Nor- thern Rocky Moun- tain.	Colo- rado.	Texas.	East Gulf.	South At- lantic.	Central.	Total.
October, 1921....	7.0	.....	1.0	1.0	2.0	.....	1.0	2.0	2.0	16.0
Average number, 1892-1912, in- clusive.....	4.2	1.3	0.7	0.5	1.7	0.7	0.4	0.5	0.3	10.3

HIGHS.	North Pa- cific.	South Pa- cific.	Al- berta.	Plateau and Rocky Moun- tain region.	Hud- son Bay.	Total.
October, 1921.....	4.0	1.0	3.0	.....	3.0	11.0
Average number, 1892-1912, in- clusive.....	2.8	0.9	3.0	1.2	0.6	8.5